

## Surgery for the Malignant Residual Cervical Stump.

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### ABSTRACT

*Surgery for the residual cervical stump after subtotal hysterectomy is a challenging procedure associated with significant morbidity especially in the presence of malignancy. The purpose of this study is to highlight complications and technical challenges associated with abdominal removal of the residual cervical stump for malignancy. This is a retrospective study involving 23 patients subjected to abdominal excision of the residual cervical stump for malignancy. The study was carried out in the Surgical Oncology department, National Cancer Institute (NCI), Cairo University between January 2008 and December 2013. Seventeen patients were subjected to removal of the residual cervical stump as a completion procedure for incidentally discovered endometrial cancer in a recent subtotal hysterectomy specimen (within 3 months). Six patients had surgery for true cervical stump carcinoma. Operative morbidity was documented in 9 patients (39 %). The most common complications were: Bladder injury and wound infection (13% each). Other complications included: bleeding, ureteric injury, urinary fistula, urinary incontinence and retention with overflow; each documented in one patient. There was no operative mortality. The mean operative time was 170 minutes and mean hospital stay was 12 days. Surgical removal of the remnant cervical stump for malignancy is a technically demanding procedure with high associated morbidity. A total hysterectomy is recommended in all indications of hysterectomy, whenever possible.*

**Keywords:** Cervical stump, cervical stump carcinoma, trachilectomy,

### INTRODUCTION

Surgery for the remnant cervical stump after a subtotal hysterectomy is a technically demanding procedure with associated significant morbidity<sup>[1]</sup>.

Subtotal hysterectomy has long been performed with the aim of avoiding complications of a total hysterectomy; mainly ureteric injuries and bleeding. The residual cervical stump gave rise to several problems including cancer, bleeding and prolapse.<sup>[1]</sup> The evolution of minimally invasive techniques (laparoscopic/ Robotic hysterectomy) raised the interest in subtotal hysterectomy with the advantages of a shorter hospital stays and quick postoperative recovery<sup>[2]</sup>. However, the decision to remove or to retain the cervix is still a matter of controversy. Advocates claim that retention of the cervix has advantages regarding urinary, bowel and sexual function<sup>[3]</sup>. These advantages were challenged in recent randomized studies and meta-analyses.. These studies concluded that there is no statistically significant difference between subtotal and total hysterectomy regarding sexual and pelvic floor function complications and clinical outcome even after a

follow up period of two years<sup>[4-7]</sup>. The reported reoperation rates for the retained cervical stump exceeded 25% in expert hands<sup>[8,19]</sup>. One of the important complications of the retained cervical stump is malignancy which may be encountered after a recent subtotal hysterectomy done for a presumed benign indication or as a primary cervical stump carcinoma with a reported incidence of 0.2 to 3% of cases<sup>[9,10]</sup>.

The purpose of this study is to highlight complications and technical challenges associated with abdominal removal of the residual cervical stump in malignant indications.

#### *Patients and Methods:*

A retrospective study was carried out involving 23 female patients who were subjected to resection of the residual cervical stump for malignancy. The study was undertaken at the Surgical Oncology department, National Cancer Institute (NCI), Cairo University between January 2008 and December 2013.

All patients in this study were operated through an abdominal midline approach despite a previous pfannenstiell incision used in all cases. A combined abdominal and vaginal approach was done in one case to remove the lower vagina. The patient's medical records were

retrieved and reviewed data included; operative details (operative time, estimated blood loss, technical details), intra and post-operative complications, hospital stay and histopathology of the previous subtotal hysterectomy, and resected cervical stump.

## RESULTS

This study involved 23 patients aged (45-69) with a mean age of 56 ( $\pm 11$ ) years. Seventeen patients were subjected to removal of the residual cervical stump after a recent subtotal hysterectomy (within 3 months) inadvertently done outside our center for benign indications with a histological surprise showing endometrial cancer in the subtotal hysterectomy specimen. The final pathology reported endometrial adenocarcinoma in 16 cases and endometrial stromal sarcoma in one case. The other six patients had surgery for true cervical stump carcinoma after subtotal hysterectomy for benign disease done a long time earlier (11-19 years). (Table 1)

The indications for subtotal hysterectomy are shown in (Table 2). The most common indications were vaginal bleeding and fibroids.. All patients had no extra-cervical disease on the preoperative workup. Cases with true cervical stump carcinoma were staged IIa. Four cases had documented ureteric stents inserted preoperatively.

Patients were subjected to abdominal excision of the residual cervical stump. Added procedures were: pelvic lymph node dissection in 17 patients, one patient had a vaginectomy and one had a partial cystectomy.

Histopathology showed residual disease in 6 out of 17 (35%) of patients who had endometrial cancer, with pelvic lymph node metastases in 2

patients only. In the patients operated for true cervical stump carcinoma (6 patients), 4 patients had keratinizing squamous cell carcinoma and two had large cell non keratinizing squamous cell carcinoma, none had pelvic lymph node metastasis (Table 1).

The mean operative time was 170 ( $\pm 64.8$ ) minutes; estimated average blood loss was 600 ( $\pm 86$ ) ml and mean duration of hospital stay was 10 ( $\pm 3$ ) days. (Table 3)

Intraoperative and postoperative morbidity was documented in 9/ 23 patients (39 %) (Table 4). There was no intra-operative or post-operative mortality.

The most common complication was bladder injury occurring in 3 patients (13%) during dissection of the urinary bladder that was adherent to the cervical stump, bladder injuries were repaired in two layers. A partial cystectomy was done intentionally in one patient due to suspected tumor invasion. One patient developed a vesicovaginal fistula which was managed conservatively by urinary catheter and healed after 3 weeks. Wound infection developed in 3 patients (13%). Ureteric injury was documented in one patient in the form of complete transection of the left ureter, which was repaired primarily with a ureteric stent inserted and removed cystoscopically one month later. Urethral injury was documented in one patient, who was subjected to a vaginectomy due to presence of an implant nodule in the lower vagina, and the urethra was repaired and a urinary catheter was inserted for three weeks. Urinary dysfunction was documented in the form of incontinence in one patient and resolved on conservative treatment after 3 months, and retention with overflow in one patient treated by urinary catheterization and bladder training and the catheter was removed five days later.

**Table (1):** Patient characteristics

	<i>Incidental Cancer (17 patients)</i>	<i>Cervical stump Carcinoma (6 patients)</i>
Time from STH	$\leq 3$ months	> 10 years
Number	17	6
Mean age	56	62
Histology	Endometrial ca (16) End stromal sarcoma (1)	SCC Keratinizing (4) Large cell Non Kerat (2)
Staging	I-II	IIA

**Table (2):** Indications of Subtotal Hystrectomy (STH)

<i>Indication</i>	<i>Early*</i>	<i>Late</i>
<b>Fibroids</b>	4	6
<b>Bleeding</b>	10	
<b>Pelvic mass</b>	3	

\* Operated within 3 months from STH

**Table (3):** Operative Data (Means)

<b>Operative time</b>	<b>170 (±64) min</b>
<b>Est. Blood loss</b>	<b>600 (± 86)ml</b>
<b>Hospital stay</b>	<b>10 (±3)days</b>

**Table (4):** Surgical Complications after resection of the cervical stump: Number, (%).

<b>Complication</b>	<b>Number of Patients: N (%)</b>
Urinary Bladder Injury	3 (13 %)
Ureteric Injury	1 (Transection of Lt ureter)
Urethral Injury	1 (Vaginectomy)
Wound infection	3 (13%)
Retention with overflow	1
Urinary Fistula *	1
Urinary Incontinence	1
Bleeding	1
Total (cases)	9/ 23 (39.1%)

\* Vesicovaginal fistula developed in one of the cases having bladder injury

## DISCUSSION

Being a tertiary referral cancer center we were faced by the uncommon challenging problem of the malignant residual cervical stump referred to our center after a previous subtotal hysterectomy performed for benign indications by gynecologists in general hospitals and private clinics, usually in limited resource areas. The major challenge is facing cases recently subjected to a subtotal hysterectomy outside our center for presumed benign disease with the histological surprise reporting endometrial cancer referred for complete surgery.

Despite recent randomized trials and meta-analyses rejecting any advantages of a subtotal over a total hysterectomy<sup>(4, 6,7,10)</sup> subtotal hysterectomy is still being practiced especially in situations where it is considered a relatively safe procedure.

Excision of the residual cervical stump is a technically demanding procedure with high morbidity associated with the abdominal approach, accordingly the vaginal approach is

recommended in benign indications by several authors<sup>(1,11,12)</sup>.

Most of the cases in this study (17 cases) had a recent subtotal hysterectomy for a benign indication mostly uterine bleeding (table 1) within 3 months of removal of the residual cervical stump which was rather a completion of an incomplete procedure. These were termed coincidental cancer being diagnosed less the 2 years from the subtotal hysterectomy<sup>(13)</sup>. There was no clear data of proper preoperative investigations done to exclude malignancy; that can be explained by limited resources in these areas like proper imaging and histopathology service, also some cases reported an emergency surgery for vaginal bleeding (5 cases).

The other 6 patients were cases of true cervical stump carcinoma developing more than 2 years (11-19 years) after previous subtotal hysterectomy mostly for uterine fibroid. That was in concordance with a study reporting 14 cases of cervical stump cancer, where a fibromyoma was the most common indication for subtotal hysterectomy<sup>(13)</sup>.

Most published data regarding the management of the residual cervical stump did not focus on malignancy as an indication for removal of the cervical stump and the most common indication for surgery was prolapse followed by bleeding<sup>(14,15)</sup>. The largest published series of removal of the residual cervical stump came from Mayo clinic: initially Mayo and Mayo in 1931 reported the risk of developing cancer in the retained cervical stump recommending removal of the cervix by coning to avoid problems of the retained cervical stump and described the technique<sup>(10)</sup>. Later Welch and colleagues reviewed 392 cases between 1940-1954 reporting prolapse and bleeding as the commonest indications for surgery recommending the vaginal approach and malignant indications were reported in 6% of cases only<sup>(14)</sup>. Pratt and colleagues reviewed 262 cases of removal of the residual cervical stump over 25 years reporting also prolapse as the commonest indication and malignant indications were documented in 27 % of cases<sup>(15)</sup>. Recently Hilger and colleagues reviewed 335 cases between 1974 and 2003 reporting also prolapse as the commonest indication followed by pelvic mass, malignant indications were documented in 12% of cases<sup>(11)</sup>.

On the other hand studies concerned with a malignant cervical stump mostly dealt with cervical stump carcinoma which was mostly dealt with by radiation therapy, Maggi and colleagues reviewed 176 cases, introducing the term (Coincidental Cancer) for residual stump carcinoma diagnosed within 36 months of subtotal hysterectomy in 32 patients only and (True Cancer) for cervical stump carcinoma developing after 36 months (average 15 years) in 144 patients<sup>(13)</sup>. Silva and colleagues reported 14 patients with stump cancer diagnosed 9 days to 27 years from subtotal hysterectomy, treatment was mainly by radiation therapy and only 3 were subjected to surgery with no data regarding surgical results.<sup>(12)</sup>

The only indication for removal of the cervical stump in this study was malignancy in the contrary in other studies a malignant indication was reported in 6-27%<sup>(1,11,14,15)</sup> and reported pathology was cervical carcinoma and dysplasia, while in this study most of our cases were operated for endometrial cancer discovered incidentally after a subtotal hysterectomy. Histopathological examination of the removed

cervical stump revealed residual disease in only 6 out of 17 (35%) of patients who had endometrial cancer documented in the previous subtotal hysterectomy specimen with pelvic lymph node metastases in 2 patients only.

The vaginal approach was recommended by most authors reporting lower morbidity over the abdominal approach: 20 and 43% respectively<sup>(1,11,14)</sup>. In our study we used the abdominal approach as the vaginal approach is generally contraindicated in malignancy due to limitations of exploration, radicality and lymph node dissection and this view was supported by Kho and colleagues who however described the technique of the vaginal approach only, as the most common indication for surgery in their series was cervical stump prolapse and accordingly the vaginal approach was common<sup>(1)</sup>.

There are special technical considerations noted: The landmark of the procedure was exposure of both ureters high at the pelvic brim and following the ureters down to the urinary bladder and careful dissection of the cervix from surrounding structures, which was endorsed in other studies<sup>(1,11)</sup>. Dissection in a virgin retroperitoneal plane is recommended, this can be achieved by starting the peritoneal incision laterally, dividing the remnant round ligament, opening a new retroperitoneal plane leading down to the bladder which is usually straddling the residual cervical stump in most of the cases. After securing the ureters the peritoneal incision was followed down to the lateral vaginal wall and a virgin plane between the vagina and urinary bladder was identified laterally and followed till the bladder was dissected off the cervical stump sometimes requiring excision of part of the fat around the bladder or a small part of the bladder. Similarly, a plane between the vagina and rectum should be identified following the vaginal wall. After dissecting the vagina all around, the cervical stump was excised with a cuff of vagina.

Abdominal removal of the retained cervical stump is a technically demanding procedure associated with significant morbidity associated with redo surgery in an anatomically crowded vascular area, this was supported by several studies<sup>(1,11)</sup>. We documented operative and postoperative complications in 9/ 23 (39.1%) patients (table 4), comparable results were seen in the Mayo clinic series reporting complications in 43% of 108 patients subjected to abdominal

removal of the cervical stump but a malignant indication was reported in 9 % of cases only and the commonest indication was cervicitis<sup>(11)</sup>. Bladder injury was the commonest complication in our study (3 patients), that can be explained by associated difficulty in dissecting the bladder off the remnant cervical stump; one of these patients developed a vesico-vaginal fistula, other urinary complications documented in our study, include ureteric injury and that was accidental during parametrectomy, probably due to adhesions related the previous surgery. Accordingly we recommend insertion of ureteric stents before surgery (Table 4). Maggi and his colleagues in 1985 reviewed 176 cases of cervical stump carcinoma where surgery was carried out in 51 patients only reporting significant morbidity and mortality associated with radical surgery for cervical stump carcinoma: vesico-vaginal fistulae in 7%, urethero-vaginal fistula in 11.3% and two cases of mortality related to the surgical procedure<sup>(13)</sup>. Hilger and colleagues reported complications of surgical removal of the cervical stump in both abdominal and vaginal approaches: perioperative bleeding was the commonest in the abdominal approach (22%) followed by infection (13%), intraoperative injury and urinary retention (4%) each<sup>(11)</sup>. These results were comparable to those in this study. None of the other studies mentioned operative data (average blood loss, operative time and hospital stay)

In an earlier study from our center Zohairy (2010) reviewed 15 cases of abdominal removal of the residual cervical stump (Malignant indications were documented in 11 patients) reported a complication rate of 46.7% which compares favorably with this study. The most common complications were wound infection and urinary tract infection: 26.6% and 20% respectively. Urinary leakage was reported in 1 patient only (6.7%).<sup>(16)</sup> The reported mean operative time was  $341.0 \pm 82.3$ ml which is less than in our study which may be due to most of his cases were true cervical stump carcinoma (53.3%) where surgery was done a long time after the primary subtotal hysterectomy in contrast to early intervention<sup>(16)</sup>. The operating time ranged from 180 to 345 min with a mean of 216 min and the mean hospital stay was 8-20 days which were comparable to our results.

Despite the paucity of published data, there is enough evidence to highlight associated morbidity

of excision of the malignant residual cervical stump. Accordingly, it was suggested that removal of the retained cervix should be considered itself as a complication of subtotal hysterectomy and a total hysterectomy is recommended to avoid this complication<sup>(11)</sup>. From another point of view considering the controversy of total versus subtotal hysterectomy the recommendation for a total hysterectomy was supported by recent studies providing level one evidence based data showing no significant added morbidity and mortality with a total hysterectomy over a subtotal hysterectomy (5, 6, 7, 13) Mayo and Mayo as early as 1931 stated "Since it is the purpose of the surgeon to restore health and insure, so far he is able, the future health of his patient, it behooves him to consider the potentialities of the cervical stump when he is confronted with the problem of total versus subtotal hysterectomy"<sup>(10)</sup>.

The deficiencies of this study are those associated with retrospective data providing observations rather than definitive statements, also the limited number of cases but the challenge was an already uncommon procedure.

Possible strength of this study is paucity of published data and reviews covering the problem of removal of the retained cervical stump especially in malignancy and to highlight a challenging problem that we are faced with in a tertiary referral cancer center.

## CONCLUSIONS

Removal of the retained cervical stump is a technically challenging procedure associated with significant morbidity especially in presence of malignancy. Current data do not support proposed advantages of a subtotal hysterectomy regarding reduced morbidity and side effects. Total hysterectomy is recommended in all indications of hysterectomy. Further multi-institutional studies including pooled data are recommended for extensive evaluation of the procedure and exploring alternative techniques.

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